4. Troubleshooting

4-1 Troubleshooting

4-1-1 First Checklist for Troubleshooting

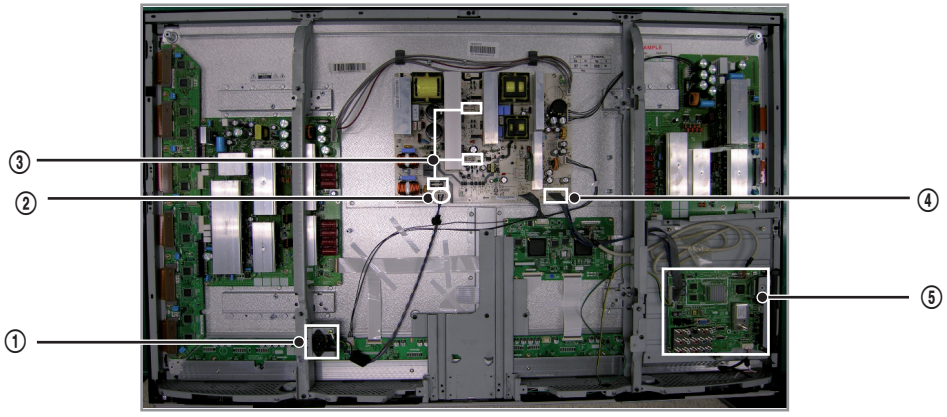
1. Check the various cable connections first.
   - Check to see if there is a burnt or damaged cable.
   - Check to see if there is a disconnected or loose cable connection.
   - Check to see if the cables are connected according to the connection diagram.

2. Check the power input to the Main Board.

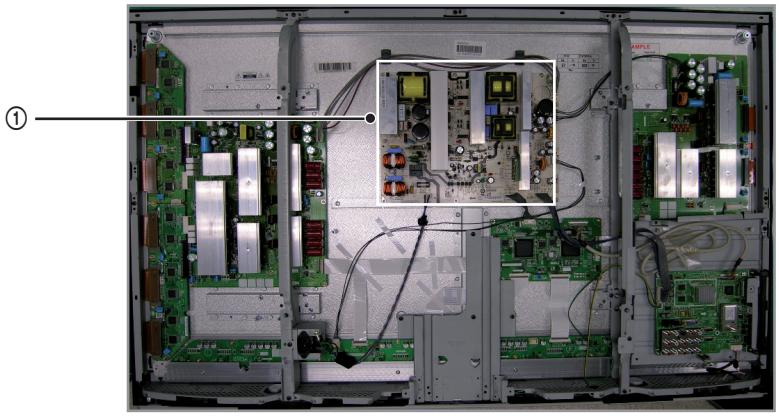
3. Check the voltage in and out between the SMPS ↔ Main Board, between the SMPS ↔ X, Y Main Board, and between the Logic Boards.

4-1-2 Checkpoints by Error Mode

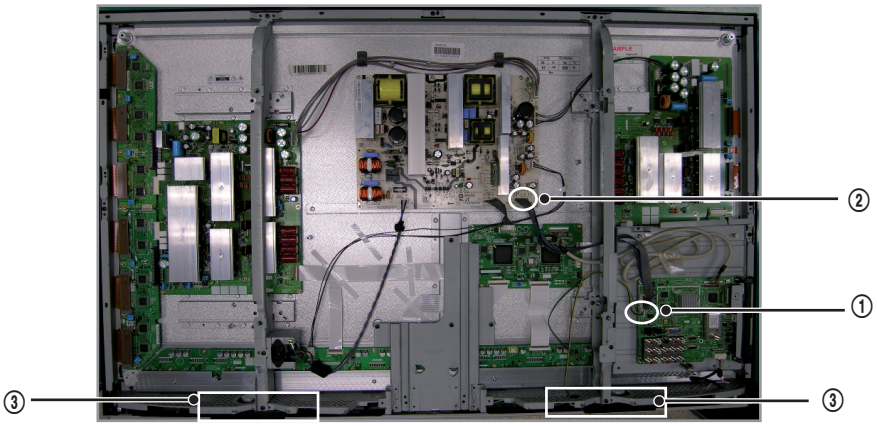
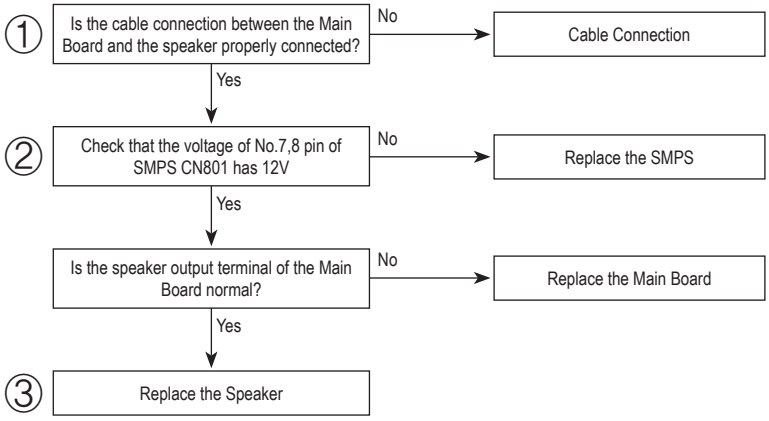
■ No Power

Symptom	- The LEDs on the front panel do not work when connecting the power cord. - The SMPS relay does not work when connecting the power cord. - The unit appears to be dead.
Major Checklist	The SMPS relay or the LEDs on the front panel does not work when connecting the power cord if the cables are improperly connected or the Main Board or SMPS is not functioning. In this case, check the following: - Check the internal cable connection. - Check the fuses. - Check the output voltages of the SMPS. - Replace the Main Board.
Troubleshooting Procedures	 ① Check that the AC power cord is connected — No → Connect the AC power cord Yes If LED is set up as being ON when POWER-ON, check the ligt-on in LED — No → Replace Fuse (FE801) Yes ② Is the AC Inlet socket connected? — No → Connect AC Inlet socket Yes ③ Check the connection between Fuse FE801 ,FB801,FS803 for checking SMPS's Fuse — No → Replace Fuse Yes ④ Check the No. 4 STAND-BY power of CN801 — No → Replace the SMPS Yes ⑤ Replace the Main Board

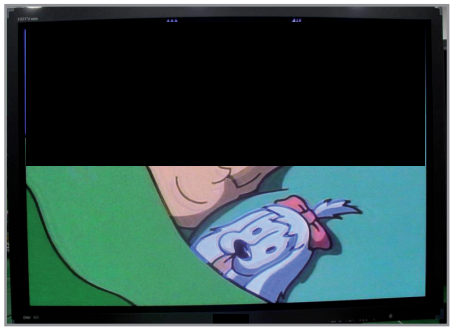
■ When the unit is repeatedly turning on and off

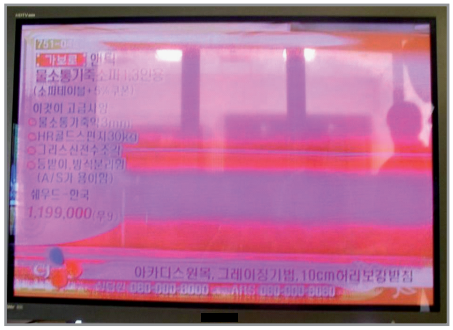
Symptom	- The SMPS relay is repeatedly turning on and off.
Major Checklist	In general, the SMPS relay repeatedly turns on and off by the protection function due to a defect on a board connected to the SMPS. - Disconnect all cables from the SMPS, operate the SMPS alone and check if the SMPS works properly and if each voltage output is correct. - If the symptom continues even when SMPS is operated alone, replace the SMPS. - If the symptom is not observed when operating the SMPS alone, find any defective assemblies by connecting the cables one by one.
Troubleshooting Procedures	 ① Check that the Va,Vs voltage of SMPS match the voltages marked on the module label → No → Replace the SMPS Yes ↓ Did problem improve? → No → Replace the Main Board Yes ↓ Did problem improve? → No → Replace the Y Main Board Yes ↓ Did problem improve? → No → Replace the X Main Board Yes ↓ Did problem improve? → No → Replace the Logic Board Yes ↓ Did problem improve? → No → Replace the X, Y Buffer Board
Caution	When separating and connecting the cables such as CN800,CN801,CN802,CN803, CN804,CN805 of the MAIN SMPS,CN4005 of the X MAIN Board, and CN5005 of the Y MAIN Board, a spark may be generated by the electric charge of the high capacity capacitor. Therefore, wait some time after disconnecting the power cord from the unit.

■ No Sound

Symptom	- Video is normal but there is no sound.
Major Checklist	- When the speaker connectors are disconnected or damaged. - When the sound processing part of the Main Board is not functioning. - Speaker defect.
Troubleshooting Procedures	 

4-1-3 Faults and Corrective Actions

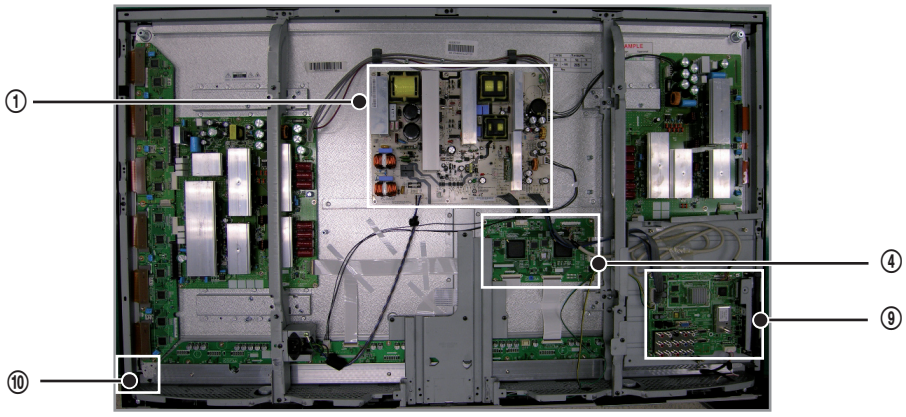
Symptom	Related Image	Causes and Countermeasures
A blank vertical cell (block) appears on the screen.		Address buffer defect - Replace the corresponding upper/ lower buffers (E, F or G) COF defect (burnt) - Replace the module
A green screen appears when the TV is turned on.		The Scale is not reseting - Replace the Main board
The OSD box appears but there is no text.		Incorrect program version - Check the version of each program - Replace the Main board
A blank upper (or lower) block appears on the screen.		Upper/Lower Y Buffer defect - Replace the corresponding upper/ lower buffers

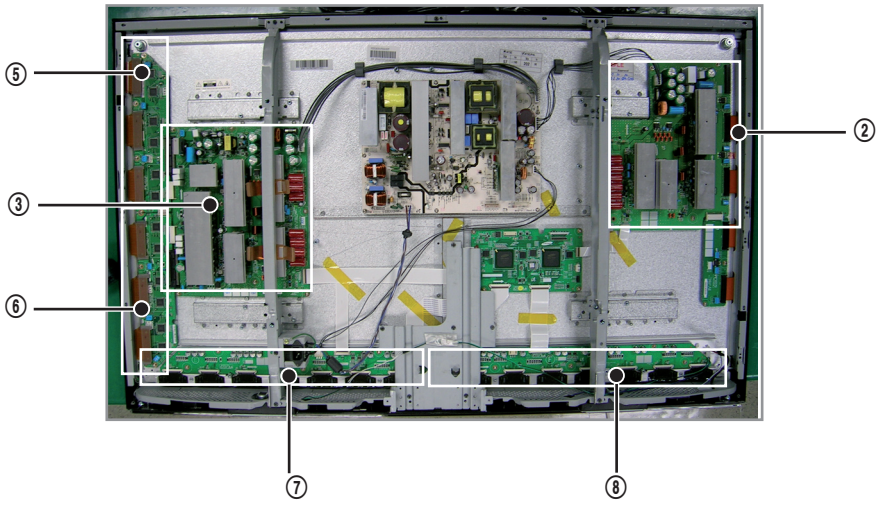
Symptom	Related Image	Causes and Countermeasures
Either the main or sub picture does not appear.		Replace the Main board
A vertical green line appears on the screen.		The SMPS voltage is incorrect - Adjust the SMPS voltage according to the voltage printed on the module label
Dim screen (blurred in red)		X-Main board defect - Replace the X-Main board
A blank screen appears		- Replace the Y-Main board

4-1-4 Troubleshooting Procedures by assembly

<50”>

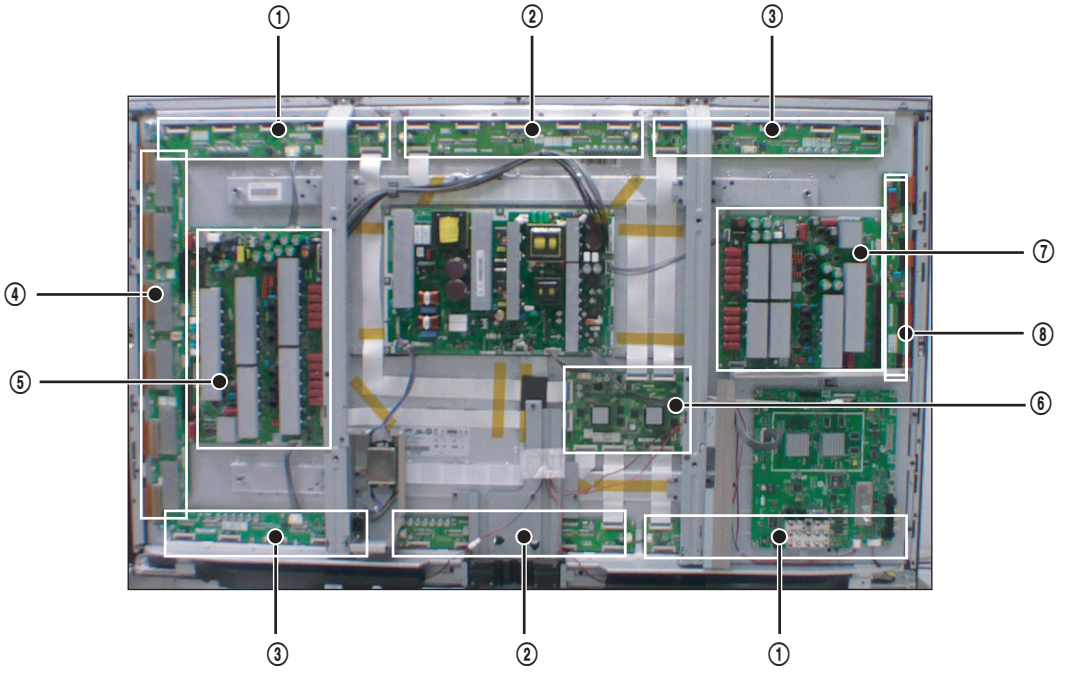
No	Assembly	Major Symptoms
1	SMPS-PDP TV	No power, Blank screen, the Relay repeats On and Off
2	ASSY PDP MODULE P-X MAIN	Blank screen
3	ASSY PDP MODULE P-Y MAIN	Blank screen
4	ASSY PDP MODULE P-LOGIC MAIN	Blank screen, Screen noise
5	ASSY PDP MODULE P-Y-MAIN SCAN UPPER	Upper screen is blank
6	ASSY PDP MODULE P-X MAIN SCAN LOWER	Lower screen is blank
7	ASSY PDP MODULE P-ADDRESS E BUFFER	Corresponding Buffer Board block screen is blank
8	ASSY PDP MODULE P-ADDRESS F BUFFER	Corresponding Buffer Board block screen is blank
9	ASSY PCB MISC-MAIN	No Power, Abnormal screen for each input source, PIP screen trouble, Sound trouble
10	ASSY BOARD P-FUNCTION&IR	The side function key does not work properly. The remote control does not work properly, the LED does not work properly.

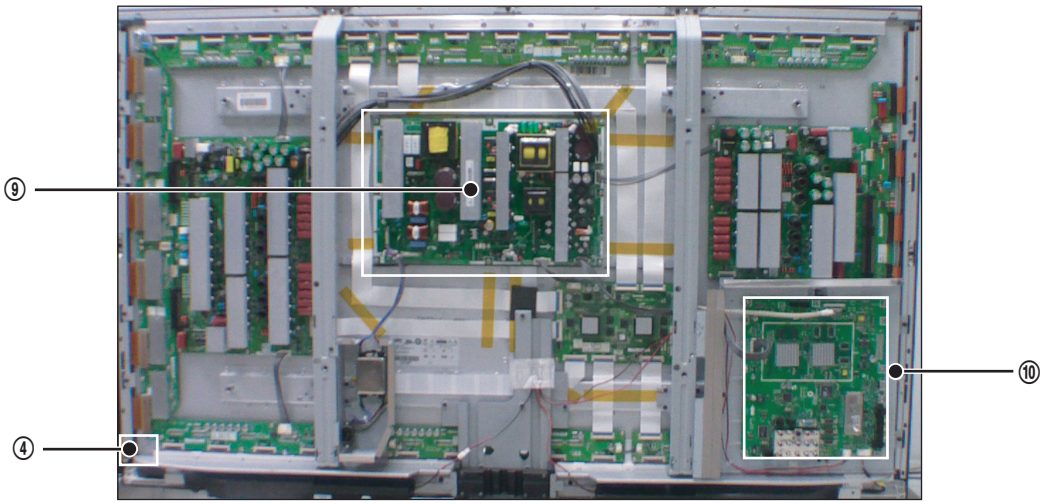




<58”>

No	Assembly	Major Symptoms
1	ASSY PDP P-ADDRESS G-BUFFER BOARD	Corresponding Buffer Board block screen is blank
2	ASSY PDP P-ADDRESS F-BUFFER BOARD	Corresponding Buffer Board block screen is blank
3	ASSY PDP P-ADDRESS E-BUFFER BOARD	Corresponding Buffer Board block screen is blank
4	ASSY PDP P-Y SCAN BUFFER PAIR	Blank screen, Screen noise
5	ASSY PDP P-Y-MAIN BOARD	Upper screen is blank
6	ASSY PDP P-LOGIC MAIN	Blank screen, Screen noise
7	ASSY PDP P-X-MAIN BOARD	Corresponding Buffer Board block screen is blank
8	ASSY PDP P-X-MAIN BUFFER BOARD	Lower screen is blank
9	SMPS_PDP TV	No power, Blank screen, the Relay repeats On and Off
10	ASSY PCB MISC-MAIN	No Power, Abnormal screen for each input source, PIP screen trouble, Sound trouble
11	ASSY BOARD P-TOUCH FUNCTION&IR	The side function key does not work properly. The remote control does not work properly, the LED does not work properly.





4-2 Adjustment

4-2-1 Service Instruction

■ Before Performing After Sales Services

1. Check if the measurement and test equipment is working properly.
2. Secure sufficient work space for disassembling the product.
3. Prepare a soft pad for disassembling the product.

■ Service adjustment item after replacement of Board

<If adjustment equipment is available>

① PDP Option of Factory Mode → set the Factory Data Type item as the suitable value of relevant model.
② Adjust Calibration of Factory Mode for each mode.
③ Adjust White Balance of Factory Mode.

<If adjustment equipment is not available>

① Write down the value of HDMI White Balance of Factory Mode before replacing Board.
② PDP Option of Factory Mode → set the Factory Data Type item as the suitable value of relevant model.
③ Set the value of HDMI White Balance with the value written down before.

4-2-2 How to Access Service Mode

1. General Remote

   To Enter: **POWER OFF** → **MUTE** → **1** → **8** → **2** → **POWER ON**

   (Interval between key strokes: less than 3 sec)

   To Exit: **POWER OFF** → **POWER ON**

2. Factory Remote

   To Enter: **POWER ON** → **INFO** → **Factory Key** (Interval between key strokes: less than 3 sec)

   To Exit: **POWER OFF** → **POWER ON**

   Press the Factory key twice with a key stroke interval of more than 1 second (Pressing once enters Aging Mode)

3. Settings when entering Factory mode
   - Sharp Screen (Dynamic), Color Tone (Cool1), Factory (Dynamic CE Off)

4. Adjustment Procedures
   - Channel ▲▼ Key: Select an item.
   - Volume ◀▶ Key: Adjust the value up or down.
   - MENU Key : Save the changes to the EEPROM and return to the higher-level mode.
   - Using the Numeric (0~9) keys, you can select a channel.
   - Using the SOURCE key, you can switch AV modes.

5. Initial SERVICE MODE DISPLAY State

Option Byte	Expert Settings
ADC	Expert D-Settings
ADC Target	Expert Gray Scale
ADC Result	Expert C-Space
White Balance	Expert Others
W/B Movie	CHECKSUM 0x0000
EPA Standard	View Log
Video/Scaler	Font Data Viewer
Enhancement	T-SPNAUSC-1000.4
SOUND	T-SPNAUSM-0019 MTK-DRV 2.0.61.0
Dynamic Contrast	RFS : T-SPNAUS-20080103 2008-01-31
LNA+	PANEL : 50FSPU
Hotel Option	PN50A550
EDID	EDID SUCCESS Option : 0001 2101 2080 0183 3921 4001 0000 0
PDP Option	CALIB : AV * COMP * PC * HDMI * DTP-COMP-0105-550-US-0002 DTP-LM-0097-550US-0005 Date of purchase : 00/00/0000

※ The version of the firmware displayed at the bottom of the screen may differ and the firmware is subject to change for the improvement of product functions.

※ If you have adjusted the settings in Service Mode, you have to reset the product.

4-2-3 Factory Data

♦ The underlined are items applied during the service adjustment. None of the others should be adjusted.

1. Option Byte

ITEM					
Factory Reset		DVI/HDMI Sound	Auto	SIDE AV OPTION	32/37/40/52
Panel Option	50FMRT4	7.5 IRE	OFF	Visual Test	Disable
Model	A550	7.5 IRE Offset	…	TUNSR	ALPS
Watchdog Enable	ON	HDMI Hot Plug	Enable	Expert Adj	OFF
Spread Spectrum	2%	HDMI Delay Time	600ms	WB Reset	OFF
SSpectrum Period	1000ns	HDMI FLTCNT SIG	300ms	EER Reset	
Dimming Selection	…	HDMI FLTCNT LOS	300ms		
RS-232 jack	Product	UNSTABLE BAN CNT	2500ms		
Gamma	0.88	HDMI Err Cnt	2		
LVDS OUT Format	PDP	Wall Calib.			
Panel Display Time	1Hr	Watchdog Count	0		
Panel Time Reset		Out Clock INV	CLK_INV		
Mute Time[RF]	600ms	Out Clock Phase	4		
Shop Mode[Aft.F/R]	OFF	SUB MICOM DOWN	OFF		
PC Mode Ident	Auto	IIC BUS STOP	OFF		

“UF1 module → Type - 50FMEUF1, Gamma - 0.95”

2. White Balance

ITEM	
Sub Brightness	128
R-Offset	514
G-Offset	512
B-Offset	511
Sub Contrast	128
R-Gain	617
G-Gain	512
B-Gain	593
Movie R-Offset	566
Movie B-Offset	488
Movie R-Gain	631
Movie B-Gain	387

3. W/B Movie

ITEM		ITEM	
W/B Movie	OFF	NOR_Roffset	…
Mode	…	NOR_Boffset	…
Color Tone	…	C2_Rgain	…
Msub Brightness	…	C2_Bgain	…
Msub Contrast	…	C2_Roffset	…
W1_Rgain	…	C2_Boffset	…
W1_Bgain	…	Movie Gamma	…
W1_Roffset	…	Movie Contrast	…
W1_Boffset	…	Movie Brightness	…
W2_Rgain	…	Movie Color	…
W2_Bgain	…	Movie Sharpness	…
W2_Roffset	…	Movie Tint	…
W2_Boffset	…	Movie Backlight	…
NOR_Rgain	…		
NOR_Bgain	…		

4. EPA Standard

ITEM	
Standard Contrast	95
Standard Brightness	45
Standard Sharpness	50
Standard Color	50
Standard Tint	0
Standard Backlight	7

5. Video/Scaler

ITEM			
manual AGC	OFF	Gain2	5
MIN_HWIDTH	7	Gain3	5
MAX_HWIDTH	20	Gain4	5
TH_HIGH	7	Gain5	5
TH_SUPER	26	Gain6	5
Noise Level	127	Gain7	2
Low Gain	74	Gain8	2
Middle Gain	80	LTI_Gain	2
High Gain	80	ECTI_Gain	2
Local Low	74	PIP_CTI_GAIN	4
Local Middle	80	PIP_CTI_FGAIN	32
Local High	80	U delay	0
Limit Pos	64	V delay	0
Limit Neg	64	Color_mid_value	156
Gain1	5	Chip_th	10

6. Enhancement

Item	
Patt-Sel	0
B-Slope gain	80
B-Tilt min	40
B-Tilt-max	90
Lfunc-Basis	70
Hfunc-Basis	80
Mean-Offset1	50
Mean-Offset2	235
Mean-Slope	100
ACR-Offset	5
ACR-Th1	10
ACR-Th2	110
Skin-Enable	ON
Skin-UV	133
Sub color	133

7. SOUND

Item	
FM/AM Prescale	3ch
Carrier Mute	ON
High Devision	OFF
SAP High Threshold	70h
SAP Low Threshold	30h
Melody Volume	10
Audio Delay	36
STA Amp Vol.	29h
STA Limit Att.	9h
STA Limit Rel.	fh
STA Post Scale	55h
STA Speaker EQ	ON

8. Dynamic Contrast

Item	
Dynamic CE	OFF
Dynamic Dimming	ON
LBE Y_MEAN	445

9. LNA+

Item	
LNA PLUS	ON
RF_dB0_TH	1
RF_dB1_TH	3
RF_dB2_TH	5
RF_dB3_TH	18
NR1_Coring	0
NR2_Coring	4
NR3_Coring	6
NR4_Coring	8

10. Hotel Option

Item	
Hotel Mode	OFF
Power On Channel	…
Power On Band	…
Power On Volume	…
Max Volume	…
Panel Button Lock	…
Power On Source	…

11. EDID

Item	
EDID ON/OFF	ON
ALL EDID	Success
PC EDID	Success
HDMI1 EDID	Success
HDMI2 EDID	Success
HDMI3 EDID	Success
EDID VERSION	HDMI 1.3

12. PDP Option

Item	
Pixel Shift Test	OFF
Logic D/L	OFF
Panel Pattern Sel.	0
Panel Type	B1
Panel Inch	50”FHD
Panel Version	W2
Panel Temperature	53
Logic SW Version	70208
Checksum	4543
MB SW	…
MB Offset1	…
Ve Control	…
Module Running Time	…
FRC Mode	…
FRC Bypass	…
FRC DBG MarkOn	…
FRC MD Force	…
DRC	…

13. CHECKSUM 0x0000

14. View Log

Item	
Select Log Type	DEFECT
View Log	
Delete Log	

15. Font Data Viewer

4-2-4 Service Adjustment

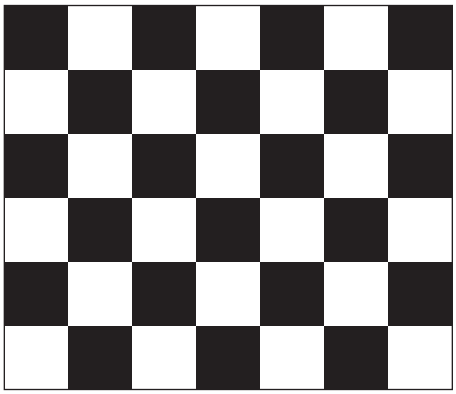
■ White Balance - Calibration

If picture color is wrong, do calibration first.

Execute calibration in Factory Mode

1. Source : VIDEO
2. Setting Mode : PAL Video (MODE: #2)
3. Pattern : Pattern #24 (Chess Pattern)
4. Use Equipment : K-7256 or Equipment of equality level
5. Work order
   ① Enter by Factory Mode select "2. WB Adjust".
   ② Select “CALIBRATION”.
   ③ Select “AV CALIBRATION” again in CALIBRATION MENU.
   ④ After Completing Calibration, come out “Av success”. OSD on the screen (bottom-side) for about 3 seconds.

Source AV : PAL composite, Component : 1280*720/60Hz
PC : 1024*768/60Hz

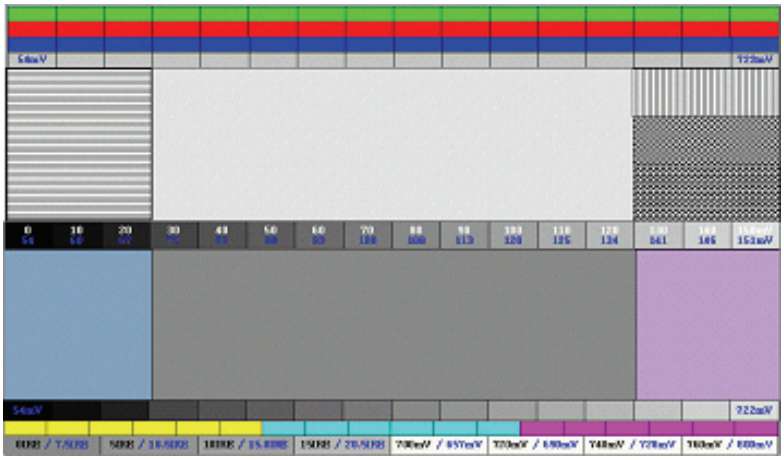


< Chess Pattern >

■ White Balance

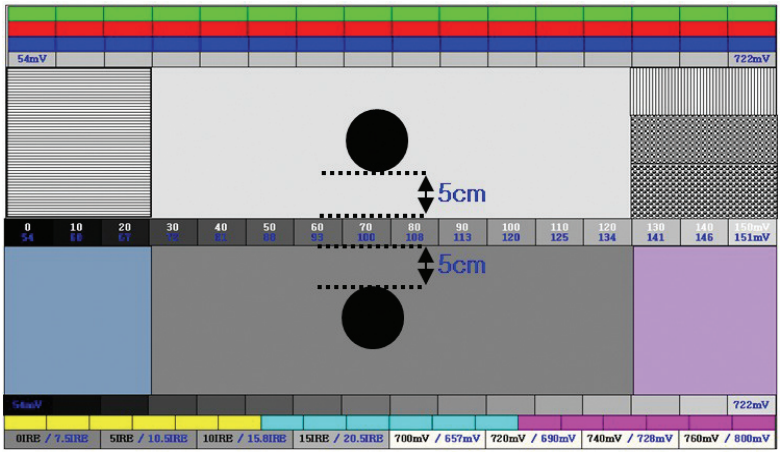
Adjust spec.

1. Source : HDMI
2. Setting Mode : 1280*720@60Hz
3. Pattern : Pattern #92
4. Use Equipment : MIK-7256 (MSPG925L)



< SAMSUNG WHITE BALANCE Adjustment PATTERN with FPD >

5. Work order
   ① Connect HDMI (DVI) output terminal of MIK-7256 (MSPG925L) to the HDMI input in main set
   ② Set the input to HDMI mode
   ③ Enter the White Balance menu of service mode
   ④ Contact CA-210 sensor to glass filter



< Fixed Position of CA210 Probe >

   ⑤ Adjust the low light
   - Adjust Sub-Bright (LBE) to set the 'Y' value
   - Adjust R-Offset ('x') and B-Offset ('y') to the color coordinates.
   * Do not adjust G-Offset data

   ⑥ Adjust the high light
   - Adjust Sub-Contrast (LBE) to set the 'Y' value
   - Adjust R-Gain ('x') and B-Gain ('y') to the color coordinates.
   * Do not adjust the G-gain data

<50")

Input mode		(CA-210)			
		x	y	Y(L)	T(K), MPCD
CVBS (NTSC)	H/L	278	285	Don't Control (Sub_CT:133)	10,500/±0
	L/L	278	285	7.3 cd/m² (2.2 Ft)	10,500/±0
COMP (720P)	H/L	278	285	Don't Control (Sub_CT:133)	10,500/±0
	L/L	278	285	7.3 cd/m² (2.2 Ft)	10,500/±0
HDMI (720P)	H/L	278	285	Don't Control (Sub_CT:133)	10,500/±0
	L/L	278	285	7.3 cd/m² (2.2 Ft)	10,500/±0

<58")

Input mode		(CA-210)			
		x	y	Y(L)	T(K), MPCD
CVBS (NTSC)	H/L	278	285	Don't Control (Sub_CT:133)	10,500/±0
	L/L	278	285	6.9 cd/m² (2 Ft)	10,500/±0
COMP (720P)	H/L	278	285	Don't Control (Sub_CT:133)	10,500/±0
	L/L	278	285	6.9 cd/m² (2 Ft)	10,500/±0
HDMI (720P)	H/L	278	285	Don't Control (Sub_CT:133)	10,500/±0
	L/L	278	285	6.9 cd/m² (2 Ft)	10,500/±0

4-2-5 Replacements & Calibration

* Check items listed after changing each

No	Replaced assembly items	Check Items
1	ASSY PCB MISC-MAIN	① Auto Program ② White Balance Adjust
2	SMPS-PDP TV	Vs, Va voltage check and adjust
3	ASSY PDP MODULE P-X MAIN	Not to be adjusted
4	ASSY PDP MODULE P-Y MAIN	
5	ASSY PDP MODULE P-LOGIC MAIN	
6	ASSY PDP MODULE P-Y-MAIN SCAN UPPER	
7	ASSY PDP MODULE P-X MAIN SCAN LOWER	
8	ASSY PDP MODULE P-ADDRESS E-BUFFER	
9	ASSY PDP MODULE P-ADDRESS F-BUFFER	
10	ASSY BOARD P-FUNCTION&IR	

※ When replacing the SMPS or PDP panel, you have to check the voltage printed on the panel sticker and adjust it.

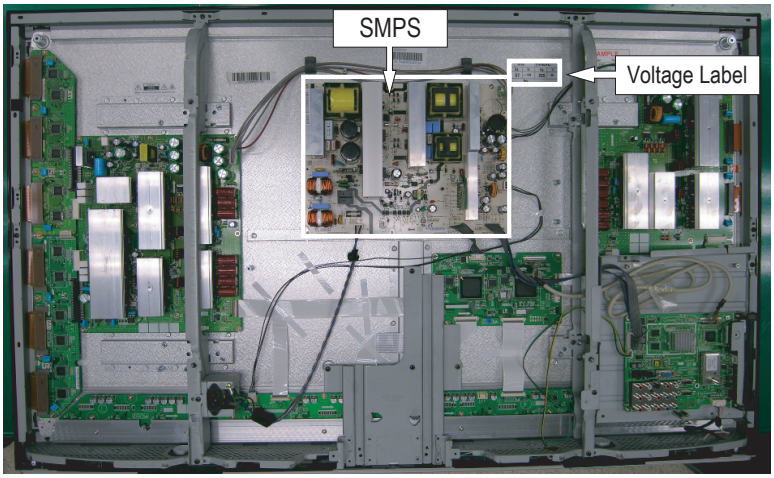
■ Voltage Adjustment

1. After replacing the SMPS or PDP panel, you must adjust the voltage referring to the voltage label printed on the panel. (If you do not adjust the voltage, an abnormal discharge symptom may appear.)

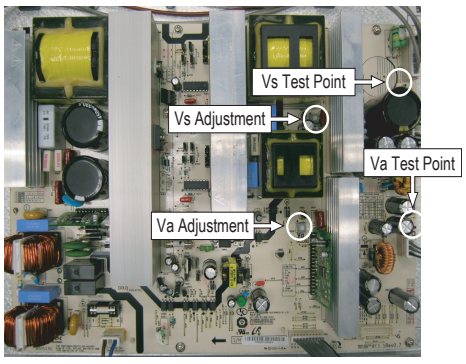
	Value	Board Adjustment
Vs	202	SMPS
Va	57	
Vset	-	
Ve	95	
Vsc	-195	

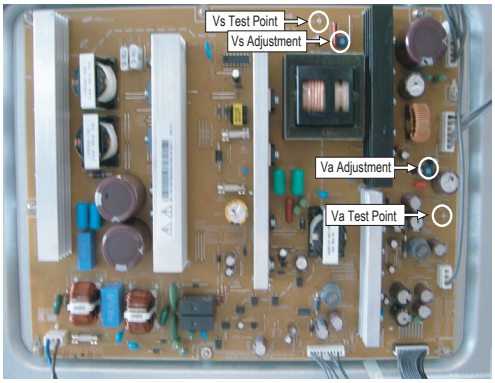
UF1 Module

	Value	Board Adjustment
Vs	207	SMPS
Va	56	
Vset	-	
Ve	96	
Vsc	-195	

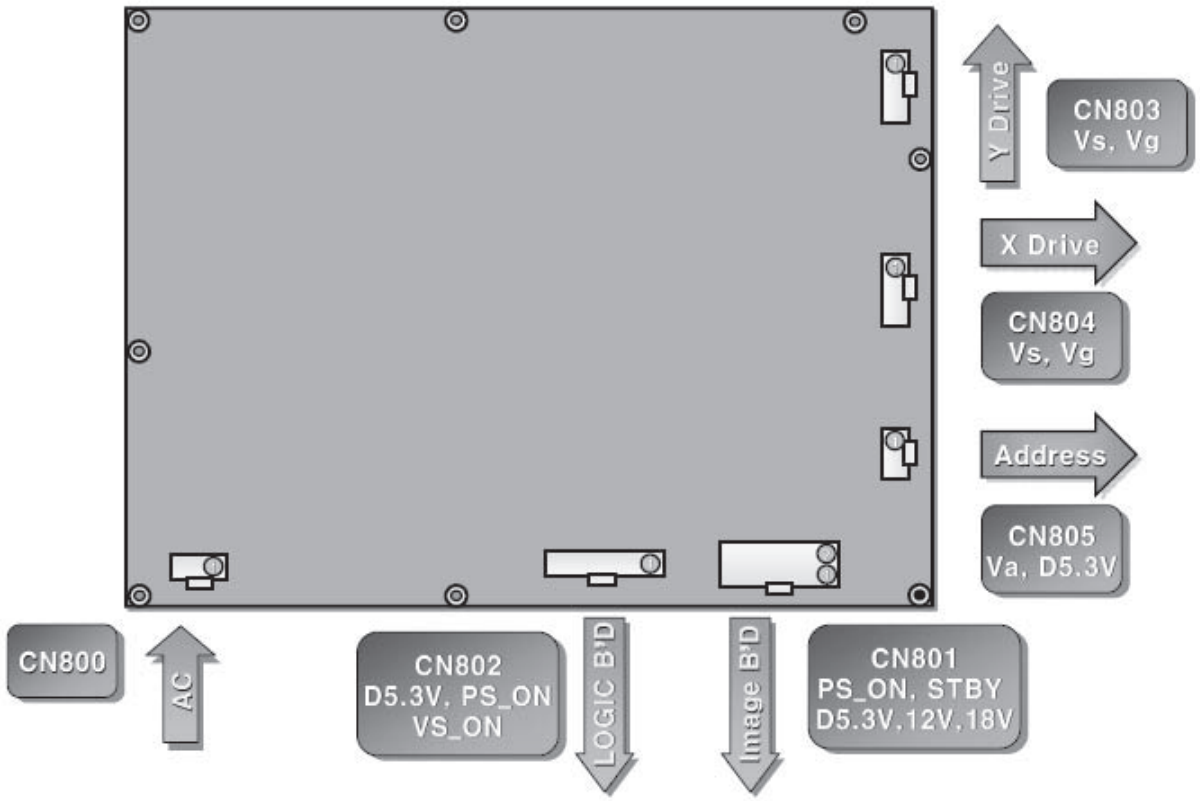


2. A point of adjusting SMPS-MAIN voltage.



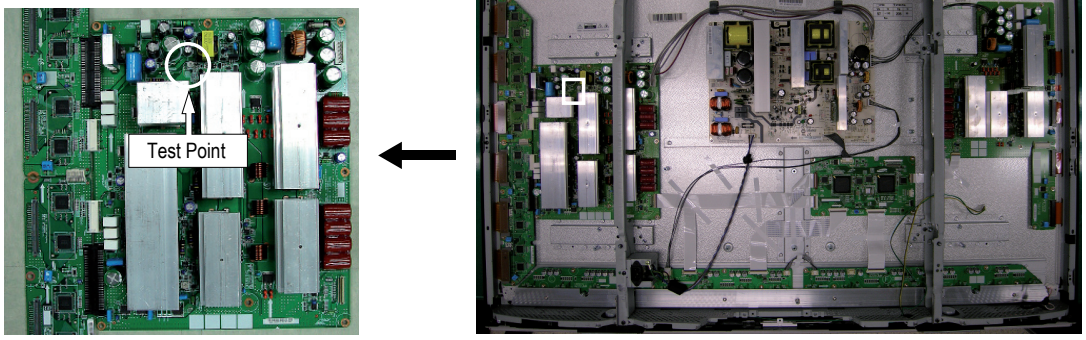


■ SMPS Output Voltag

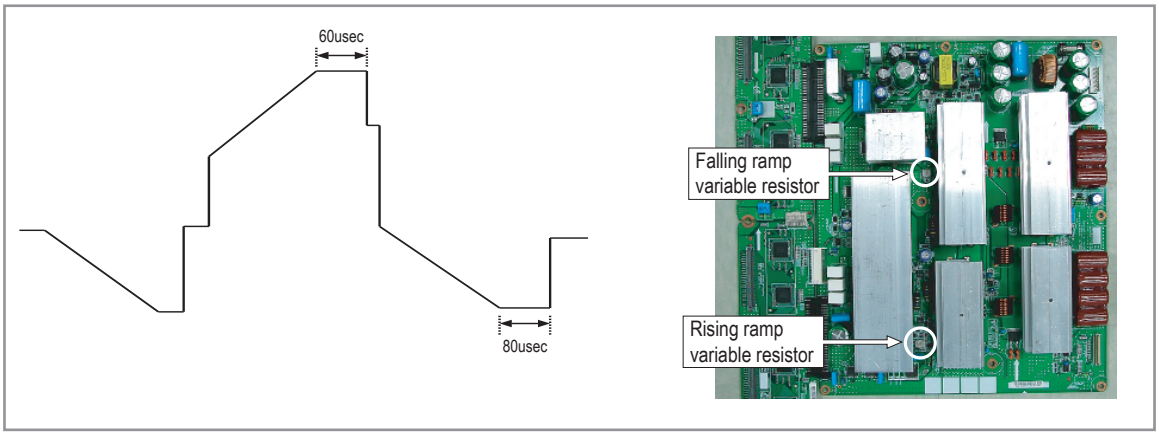


		Output Voltage		Output Current				Regulation	Protection (shutdown)			Ripple & Noise
		Min	Max	Min	Typ	Max	Peak		OVP	OCP	UVP	
1	VS	195V	210V	OA	2.2A	3A	15A	±1.5%	230V ↑	3.7A ↑	160V ↓	8V p-p (@15Ap)
2	VA	50V	60V	OA	1A	3A	10A	±1.5%	72V ↑	4.5A ↑	45V ↓	5V p-p (@10Ap)
3	VG	15V FIX		OA	0.5A	1A	1.5A	±5%	16V ↑	1.2A ↑	13V ↓	120mV p-p
4	5.3V	5.3V FIX		OA	7A	9A	12A	±3%	7V ↑	10A ↑	3.6V ↓	100mV p-p
6	12V	12V FIX		OA	1.5A	2.5A	3.5A	±5%	13V ↑	5A ↑	11V ↓	120mV p-p
7	VAMP	18V FIX		OA	0.5A	2.5A	3A	±5%	20V ↑	5A ↑	0.3V ↓	180mV p-p
8	STBY	5.2V FIX		OA	0.5A	1A	1.5A	±3%	6V ↑	5A ↑	-	100mV p-p

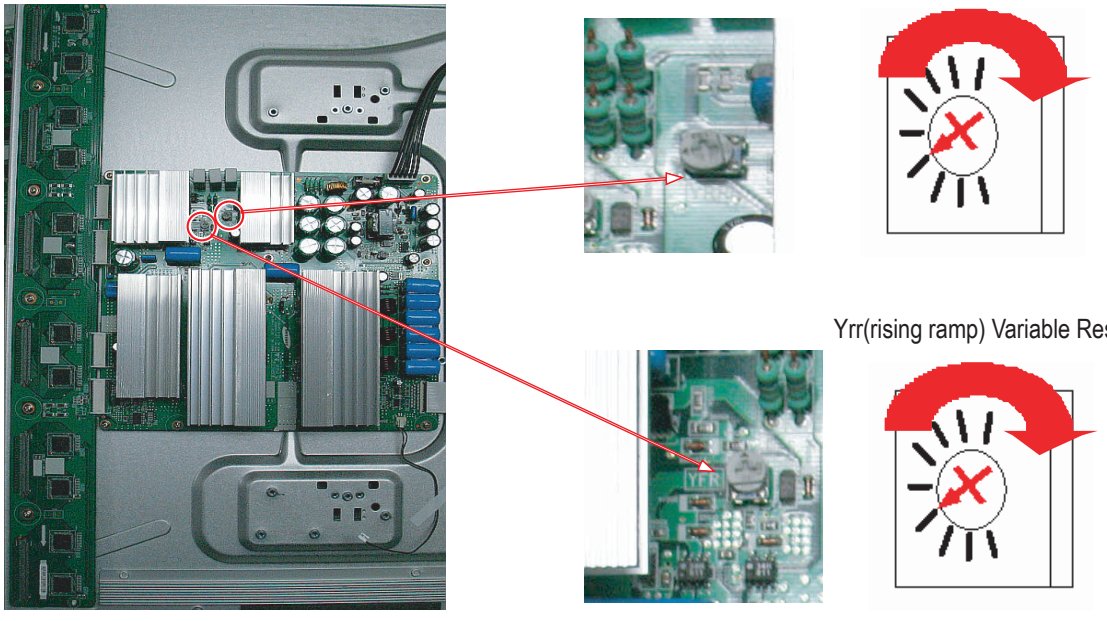
■ Y-RR and Y-FR controls



Set the main reset (rising : 60usec, falling : 80usec) by change the value of variable resistor.



Yfr(falling ramp) Variable Resistor



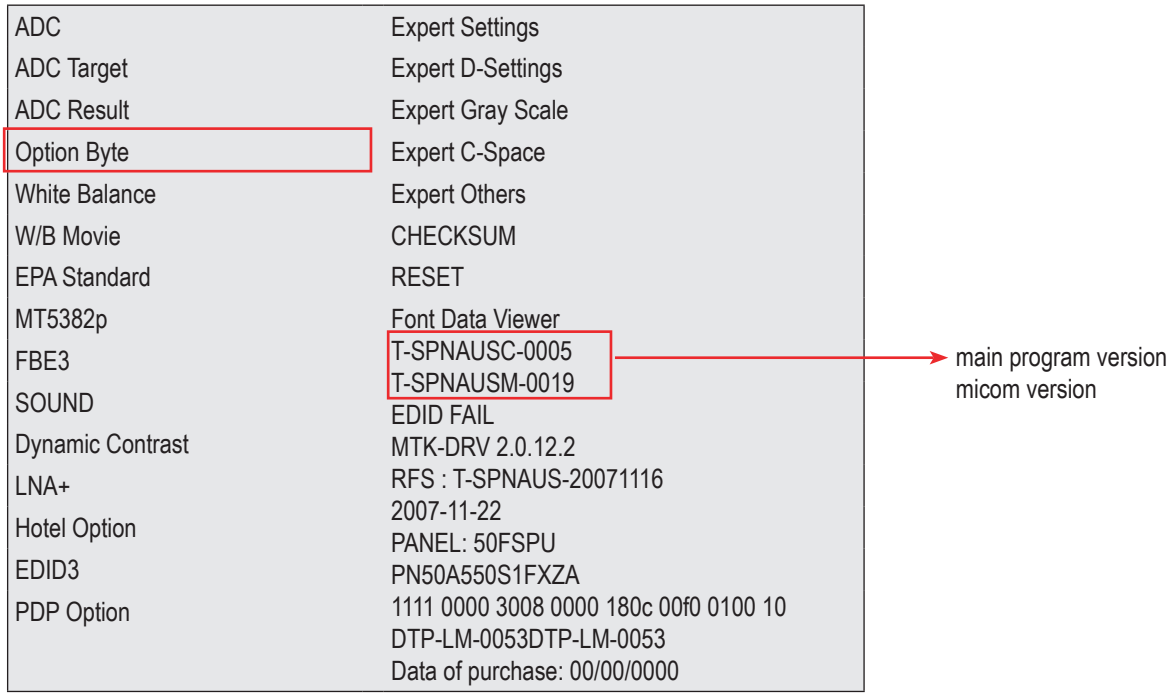
Yrr(rising ramp) Variable Resistor

rising : 50usec, falling : 60us

4-3 Upgrade

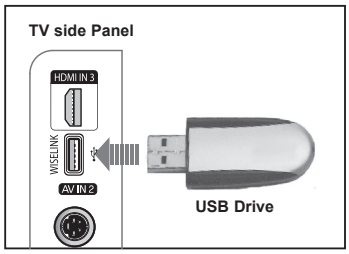
4-3-1 How to Check the Version of the Program

1. Procedures for checking in the Factory Menu.
   When entering Factory Mode, the version of the software is displayed at the bottom of the menu as described on page 4-9.



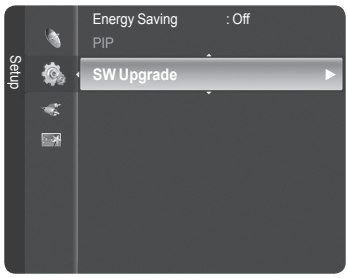
4-3-2 How to Upgrading the Software

1. Insert a USB drive containing the firmware upgrade into the USB Upgrade Port on the side of the TV.



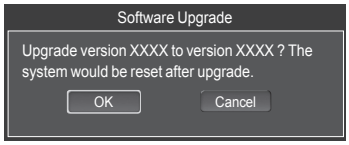
2. Press the MENU button to display the menu.
   Press the ▲ or ▼ button to select Setup, then press the ENTER button.

3. Press the ▲ or ▼ button to select SW Upgrade, then press the ENTER button.



4. The message Scanning for USB... It may take up to 30 seconds. is displayed.

5. If the firmware on the USB is properly recognized, the message Upgrade version xxxx to version xxxx? The system would be reset after upgrade. is displayed.
   Press the ◄ or ► button to select OK, then press the ENTER button. The upgrade starts.
   Please be careful not to disconnect the power or remove the USB drive while upgrades are being applied. The TV will shut off and turn on automatically after completing the firmware upgrade.



   ► When software is upgraded, video and audio settings you have made will return to their default (factory) settings.
   We recommend you write down your settings so that you can easily reset them after the upgrade.

4-3-3 BSP Version Update

1. BSP: uImage, pack.bin, rootfs.img, boot.img

2. Open [SpinelUS]update-XXXX.zip file in the USB file.

3. Equip USB in the state of set watchdog ‘OFF’, and progress upgrade with mute 7 8 9 exit.